

Badger Minerals LLC

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Menominee, MI 49858
906-352-4024

May 12, 2020

Benjamin Callan
Wisconsin Department of Natural Resources
101 S. Webster Street
Madison, WI 53707-7921

RE: Notification of commencement of Schoepke drilling program (Sections 4 & 9, T35N, R11E, Oneida County)

Dear Mr. Callan,

This letter serves to notify the Department that Badger Minerals is planning on commencing their proposed exploratory drilling program in Schoepke Township, Oneida County on **June 1, 2020**. The program will include the drilling of up to 10 drill holes, from up to 8 drill sites, with a total drilled footage of 4,000 linear feet. In the event of minor delays to the start of the program, caused by delays in mobilization of equipment or crews, Badger Minerals will notify the Department as the situation arises.

A Notice of Intent to Drill document (NOID) was previously submitted to the Department on the 28th of January, 2020 outlining project specific details of the drilling program (**Attachment 1**). Badger Minerals subsequently received comments back from the Department on February 7, 2020 regarding the company's NOID (**Attachment 2**). Over the past few months, Badger Minerals has worked to address these comments with the various departments of the DNR and has currently secured all necessary permits and approvals to allow the drilling program to commence. A summary of additional permits and approvals obtained by Badger Minerals and responses to DNR comments on Badger Minerals' Notice of Intent to Drill is located in the section below. Throughout this review process, a number of general changes were made to the original NOID, including:

- The proposed schedule of the drill program has been changed to begin on June 1, 2020 and will take approximately 18-25 days to complete
- A reduction of the maximum number of drill sites from 10 to 8 (see revised site map attached as **Figure 1**). The total number of drill holes (10) and total footage (4,000') has not changed.

- The estimated area of the drill sites has been increased from 50'x50' to 50'x62.5'
- As the program is no longer taking place during the winter, Badger Minerals has planned to implement the use of certain BMP's to prevent mobilization of soils from the drill sites
- Lime will be added to the sumps prior to being backfilled (at minimum of 25 lbs. per 100 feet of bedrock drilled)

Summary of Additional Permits and Approvals Obtained by Badger Minerals
and
Responses to DNR Comments on Badger Minerals Notice of Intent To Drill
(Refer to **Attachment 2** for DNR Comments)

Waterways and Wetlands –

Badger Minerals submitted to the Department on March 26, 2020 two Exemption Determination Requests (Refer to **Attachments 3,3A,3B,3C** and **3D**) to determine whether two proposed temporary intake structures (along Stockley Creek) were exempt from the permit requirements of Chapter 30, Wis. Stats. Within the above submittal, Badger Minerals also asked that the department consider granting the company a waiver allowing for the placement of the above referenced intake structures to be placed during the typical fish timing restrictions (April 1 – June 1). The Department subsequently reviewed the requests and confirmed that the intake structures were exempt from department authorization in a letter dated April 10, 2020 (**Attachment 4**). In addition to the exemption determination, the Department also granted Badger Minerals the requested waiver for typical timing restrictions based on the limited disturbance expected to the stream during installation and removal of the structures.

In the DNR's comments to Badger Minerals' NOID, the Department also indicated that department authorization would also be required if surface water withdrawals "resulted in a water loss averaging 2 million gallons per day in any 30-day period" and that surface water withdrawals may only be done on behalf of the riparian property owner. Within the two EDR's submitted to the Department (**Attachments 3A and 3C**), Badger minerals indicated that withdrawal of surface water would only be completed periodically on an as needed basis and that the maximum estimated water that would be taken from Stockley creek would be ~12,000 gallons in a 24-hour period. Badger Minerals also provided the department with an email from the Property owner (The Forestland Group/Heartwood) confirming that the company has permission to use Stockley Creek as a water source on their property (**Attachment 3D**).

WPDES – Wastewater –

A general permit for dewatering operations is required for the dewatering of the sumps used to store and recirculate drilling fluids, and to contain drill cutting during drilling operations. Badger Minerals submitted to the department, on February 25, 2020, the required forms for application of the general permit (WI-0049344-05-0) (**Attachment 5** and supporting documents

Attachments 5A-5E). *Note that Badger Minerals' Notice of Intent to Drill Document (NOID) and the DNR's Comments and responses to the NOID, referenced in **Attachment 5** as items 1 and 1.a, respectively, have been previously attached to this document as **Attachments 1** and **2**, respectively)*

On February 28, 2020 Badger Minerals received a letter from the Department (**Attachment 6**) indicating that the proposed operation is eligible for coverage and is authorized under the Wisconsin Pollutant Discharge Elimination System (WPDES) general permit for Dewatering Operations (No. WI-0049344-05-0).

Stormwater – Erosion Control –

The DNR requested additional information regarding planned soil disturbances related to the proposed drilling program and noted that if total soil disturbances were equal to or exceeded 1 acre, a construction site stormwater permit would be required under NR 216, Wis. Adm. Code.

Badger Minerals provided a document containing detailed disturbance estimates for the project (**Attachment 7** and **7A**). Total disturbance for the project was estimated at approximately 0.8 acres and took into consideration:

- A reduction in the total number of drill sites from the originally planned 10 drill sites to 8
- A revised estimate of the drill site footprint which includes accommodation of soil stockpiles and updated drilling equipment sizing
- An estimation of potential disturbance related to clearing a path to the drill site off of established forest trails.
- Considerations related to potential disturbances at loading/off-loading/staging sites as well as water withdrawal sites

The document also described certain mitigations/BMP's that will be implemented to prevent/reduce the potential for erosion of disturbed material and sedimentation into waters of the state as required under the performance standards outlined within NR 151.105.

The Department reviewed the documents and confirmed in an email (**Attachment 8**) that a stormwater permit was not required based on the current scope and planned disturbance of the project.

Endangered Resources –

The department requested that an Endangered Resources Review (ERR) would need to be submitted prior to initiating the proposed drill program.

Badger Minerals submitted a request for a review from the Endangered Resources Review Program on February 11, 2020 **Attachment 9** and **9A**. *Note that Badger Minerals' Notice of Intent to Drill Document (NOID), the DNR's Comments and responses to the NOID, and the Location Map referenced in **Attachment 9** as items 1, 2, and 3, respectively, have been previously attached to this document as **Attachments 1, 2, and 5B**, respectively)*

Badger Minerals received the results from the ERR on February 21, 2020 (**Attachment 10**). The results included no 'required actions' that needed to be completed in order for the project to be carried out, and included 2 'recommended actions' for species of special concern for consideration.

Badger Minerals discussed with the Endangered Resources Review Program changes in the anticipated schedule of the drilling program and potential conflicts with the adjusted schedule and the recommended actions that were identified. Potential mitigation measures were discussed for completing the program as well as measures that could be considered if the project evolves beyond the scope of exploratory drilling.

Site Reclamation –

As required by the DNR, Badger Minerals increased the surety bond payable to the Department to \$25,000 to cover the estimated reclamation costs of the program (**Attachment 11**). The bond was mailed to the Department on April 18, 2020.

Drilling Mud –

Badger Minerals has reviewed the list of drilling product approved by the Department and will only use products contained within this list. The list of department approved products was included in Badger Minerals submittal for a general dewatering permit and are attached to this document as **Attachment 5D**.

Disposal of Drilling Mud and Cuttings –

As required by the Department, drill cutting will be amended with lime prior to the sump being backfilled. The Department requires such amendment of the cuttings if total metallic sulfide mineral content exceeds 3% by volume over more than 50' of bedrock encountered. Through discussions with local governments (county/township) Badger Minerals has agreed to amend each sump with a minimum of 25 lbs. of lime per 100' of bedrock encountered, regardless of estimated metallic sulfide content, as an added measure to reduce the potential for acid generation. Lime will be added and mixed with the cuttings immediately prior to backfilling the sump with native soils.

The above minimum lime quantity is calculated to be approximately 5 wt.% of the total cuttings per 100' of bedrock encountered. Additional lime may be added based on metallic sulfides encountered in the drill holes. As a note, Badger Minerals informed the Bureau of Water Quality of the proposed increase in the minimum liming dosage and confirmed that this increase does not affect the current coverage under the WPDES General Permit.

Quantification of metallic sulfide content is standard procedure during the logging of exploratory drill holes as this information is useful from an economic standpoint when evaluating the mineral potential of the geology encountered.

During the program, the geologist on site will document the estimate of total metallic sulfide content contained throughout the drill hole(s) prior to the sump being backfilled. Sulfide estimation is completed visually and will be quantified on an interval basis during the review of the drill core. Sulfide content will be estimated on intervals no greater than 10 feet and smaller intervals will be considered if sulfide content is highly variable over shorter lengths. The estimation will be included within a "Sump Abandonment Log". Information contained within the log will include:

- Date of Excavation
- Date of Reclamation (Backfilling)
- Assurance that topsoil has been spread over backfilled sump
- Drill hole ID(s) related to the sump
 - Total depth of drill hole(s)
 - Total bedrock encountered in drill hole(s)
 - Calculation of total quantity of cutting in sump (volume and mass (using a nominal density of 2.8 g/cubic cm))
 - Metallic sulfide content encountered within the drill hole
- Quantity of lime added to sump prior to backfilling

As required under the WPDES General Permit, the company will keep digital copies of these logs for a minimum of 3 years.

In Addition to the comments received by the DNR on February 7, 2020, Badger Minerals would also like to address a couple of additional items that have come up during conversations with the Department:

- A number of drill sites are located on Managed Forest Law lands which are designated open to the public. The public can access these lands exclusively for the purposes of hunting, fishing, hiking, sight-seeing, and cross-country skiing. For the purposes of the public's safety and the safety of the workers at the drill sites, a barrier (likely consisting of caution tape) will be placed around the active drill site to maintain a safe working distance between the drill site and the public. Badger Minerals will also keep all gates closed while working on land open to the public to ensure that there is no unauthorized vehicular traffic.
- As site clearing and sump construction activities are undertaken, representatives of Badger Minerals, as well as contractors at the sites, will be made aware of the possibility that archeological artifacts could potentially be uncovered. Any artifacts that are discovered will be reported to the State Archeologist. In the event that human remains of any kind are identified, work at the drill site will stop immediately and the Sheriff's Department and the State Archeologist will be contacted. Work at that drill site will not resume unless authorized to do so by the Sheriff and/or the State Archeologist.
- Badger Minerals has contracted with Taconite Drilling based out of Warba, MN to complete the drilling and drill hole abandonment (see contact info below). Drilling will be completed with a skid/wheel mounted Sandvic DE-130 drill. A backhoe/loader will be used to transport the drill rig, for site/sump preparation, and for reclamation activities. A pickup truck with a 500-gallon water tank will be used to transport water from the water source to the drill.

Mark Porter, CEO/Driller, Taconite Drilling
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As the commencement date nears, Badger Minerals will make the Department aware of any changes or delays to the current schedule as this information becomes available.

Please don't hesitate to contact us with any questions or requests for further information.

Sincerely,

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